TROUBLE-LOCATING METHODS—BULK TROUBLE CLEARING
SERVICE IMPROVEMENT GUIDE
EVALUATION TEST PROCEDURES
NO. 5 CROSSBAR OFFICES

1. GENERAL

1.01 This section is one of a series of Bell System Practices that comprise the No. 5 Crossbar Service Improvement Guide. This section provides trouble analysis and duplication procedures that can be used to accomplish bulk trouble clearing in the office.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 Recommendations for changes, additions, and/or deletions to this section should be forwarded as specified in Section 000-010-015.

1.04 Section 218-080-100, General Description of the No. 5 Crossbar Service Improvement Guide, provides a complete table of contents and reference information for using the entire Service Improvement Guide.

2. TROUBLE ANALYSIS AND PROCEDURES

2.01 Each trouble record should be analyzed to determine if the problem is due to input, translation, routing or connecting. By grouping the troubles into these categories, it should be easier to duplicate and find the problems using the MTF.

2.02 When a trouble is located, all other like circuits should be tested for the same or a similar problem. Bulk trouble clearing should eliminate those problems which have been in the switch for long periods of time. The trouble indicators which are normally the easiest to locate are first-trial failures. For instance:

(1) A first-trial failure to a particular trunk will not fail on second trial usage because the trunk will appear busy from the first usage.

(2) The same condition exists with a sender which cannot be reseized on a second-trial attempt.

2.03 In many cases second trial attempts are not made following first trial failures. On a call-back usage failure, after the RL relay has operated in the originating register, the marker will release after taking a trouble record and the calling customer will receive dial tone after dialing.

2.04 There are a few troubles that are generated during periods of very light traffic. These problems should be cleared first because they are not due to interaction between other pieces of equipment. Normally, they are easily duplicated.

2.05 In addition to trouble record cards, there are other indicators that can show the need for bulk trouble clearing, such as alarms, customer complaints, distant office referrals, traffic register indications, and data printouts.

3. TROUBLE LISTINGS AND PROBABLE CAUSES

3.01 Trouble analysis and trouble clearance can be expedited using the listing of the most common troubles and their probable causes as follows:

- ***Trouble:*** TRS (Transfer Start) Failures.

Probable Causes: False all circuits idle, false operated CB (circuit busy), false TM, or defective timer.

- ***Trouble:*** Missing lines of information (partial trouble record cards on originating traffic).

  Probable Causes: Open TM or L lead between the OR and the ORMC; defective MAK, MSK and MCK multiple for indicated marker.

- ***Trouble:*** Mutilated incoming trunk class or trunk link frame number from incoming register (IR) groups.

  Probable Causes: Open RB_ relay winding in incoming register link (IRL), incorrect 48-volt battery feed between IRLs of the IR group, or shorts in C or CA relays in IRL

- ***Trouble:*** Mutilated input to markers excluding digits.

  Probable Causes: Open CB relay winding in marker connectors. Defective RS chain in register part of marker connector; shorted contacts in marker part of marker connector.

- ***Trouble:*** Automatic Message Accounting (AMA) first-trial failures and no second-trial indications.

  Probable Causes: Defective hold path to the associated sender for trouble and regular release; sender stealing of transverter; false time-outs when busy translators or busy recorders are detected by transverter.

- ***Trouble:*** IPA failures.

  Probable Causes: Shorted DJ lead in associated trunk; defective preferencing in call identity indexes.

- ***Trouble:*** No route relay.

  Probable Causes: Vacant code dialed; open S_ cross-connections for code dialed and class of service.

- ***Trouble:*** TS failures.

  Probable Causes: False FTC_ cross-connection on associated trunk link frame for dialed route; open winding or operating path of TT_ or TS_ relay in associated marker; shorted FTC_ lead in the route relay in associated marker.

- ***Trouble:*** Continuity (CON) failures—dial tone.

  Probable Causes: Shorted cross-connection and Main Distributing Frame (MDF); shorted LG_ relay contact for vertical file at associated line link frame; defective channel.

- ***Trouble:*** CON failures—completing markers.

  Probable Causes: Missing MDF cross-connections on forward linkages; defective channel.

- ***Trouble:*** False Cross and Ground (FCG) failures.

  Probable Causes: Tip or ring shorts on adjacent channels with the associated channel identified on trouble card; shorted contacts on associated FA_ or FB_ relay on associated trunk link frame.

- ***Trouble:*** DCT failures.

  Probable Causes: Trapped select finger on switch and/or vertical of adjacent selected channel; shorted sleeve lead on associated channel; false hold magnet operation on selected path.

- ***Trouble:*** DNK failures.

  Probable Causes: Missing translator cross-connection; check for the after date standard 430 type tube. Verify that not more than 500 cross-connections are run through any one coil at the translator.

- ***Trouble:*** LR (Link Release) failures.

  Probable Causes: Dirty contacts on the C or CA relays of the IRL; false operation of unassigned TP_ relay in the IRL; defective operating path from the IRL to the associated incoming register.

- ***Trouble:*** Crosses (Xs)—Standing Cross Test failures.

  Probable Causes: Shorted contacts in the marker multiple. (Make circuit busy, block the "X" relay non-operated, and place "X" relay operate potential on the operate winding of the "X" failure. Check for other circuit failures for like or unique troubles and determine which common equipment was used on the failure.) Check for crossed contacts at the defective marker's multiple.

- ***Trouble:*** Mutilated digits—TOUCH TONE®

  Probable Causes: Binding face plates on TOUCH TONE receivers. (Remove face plates and replace the same inside out.) Check that each receiver unit has its own individual ground supply at the rear of the frame. Verify that the "star" and "pound" digits will generate immediate reorder from each originating register (OR).

- ***Trouble:*** Mutilated digits—dial pulse.

  Probable Causes: Verify if mutilations are coming from the same lines. Check if only a few ORs are generating mutilated digits. At the OR verify that the LW resistor is one watt, and measure that the resistor is 620 ohm.

- ***Trouble:*** Mutilated digits—pretranslator trouble cards.

  Probable Causes: If no completing marker cards follow the pretranslator cards, check the air gap on the armatures of the PRT connector G_ relays. (If there is no air gap, place separators on the relay armatures.)

- ***Trouble:*** LXPI failure.

  Probable Causes: Stealing of line link connector MR or E relay; false connector transfer; failure to recycle the HMT timer on first failure to match; defective line link select finger on associated channel.